

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

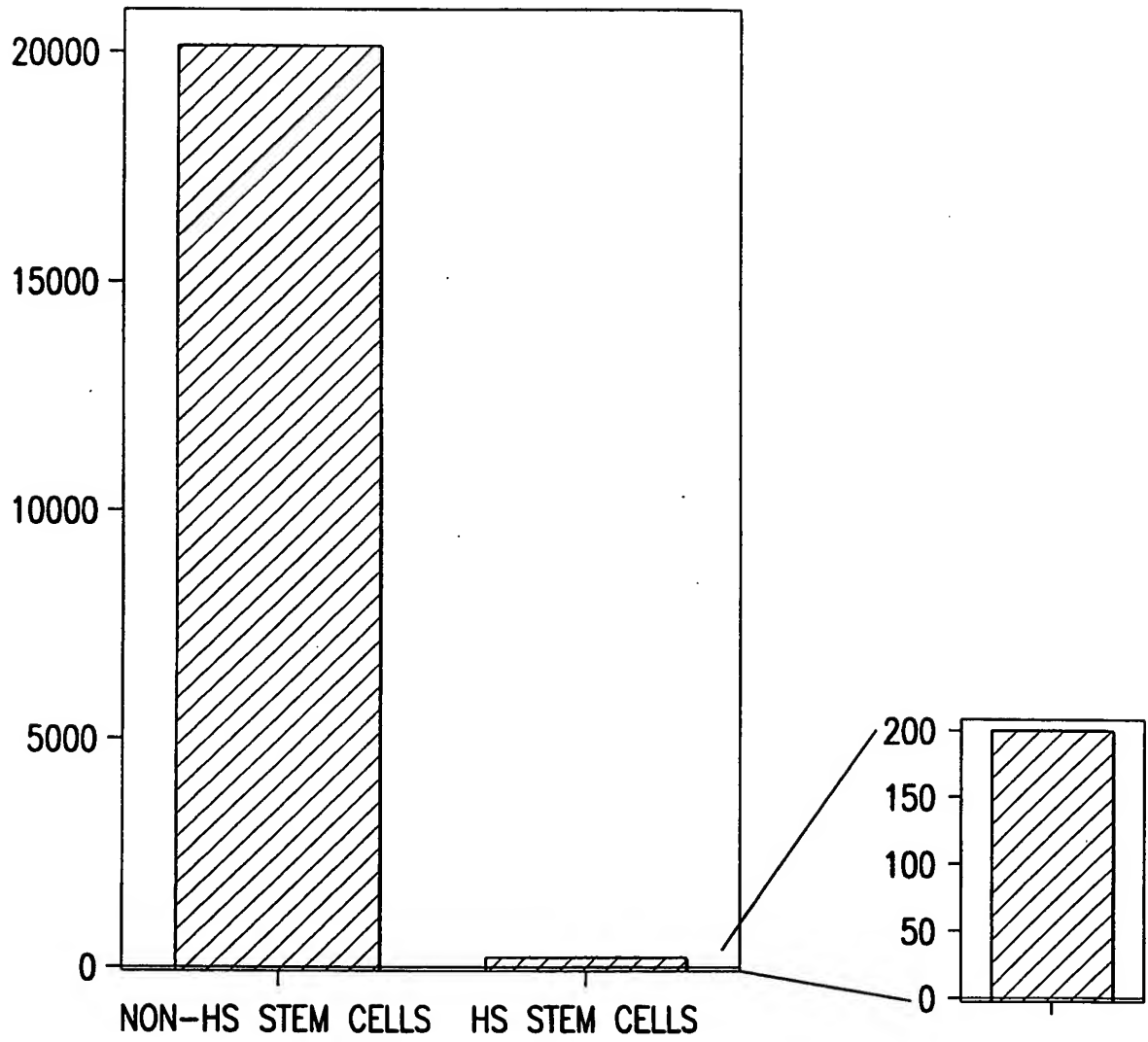


FIG.1

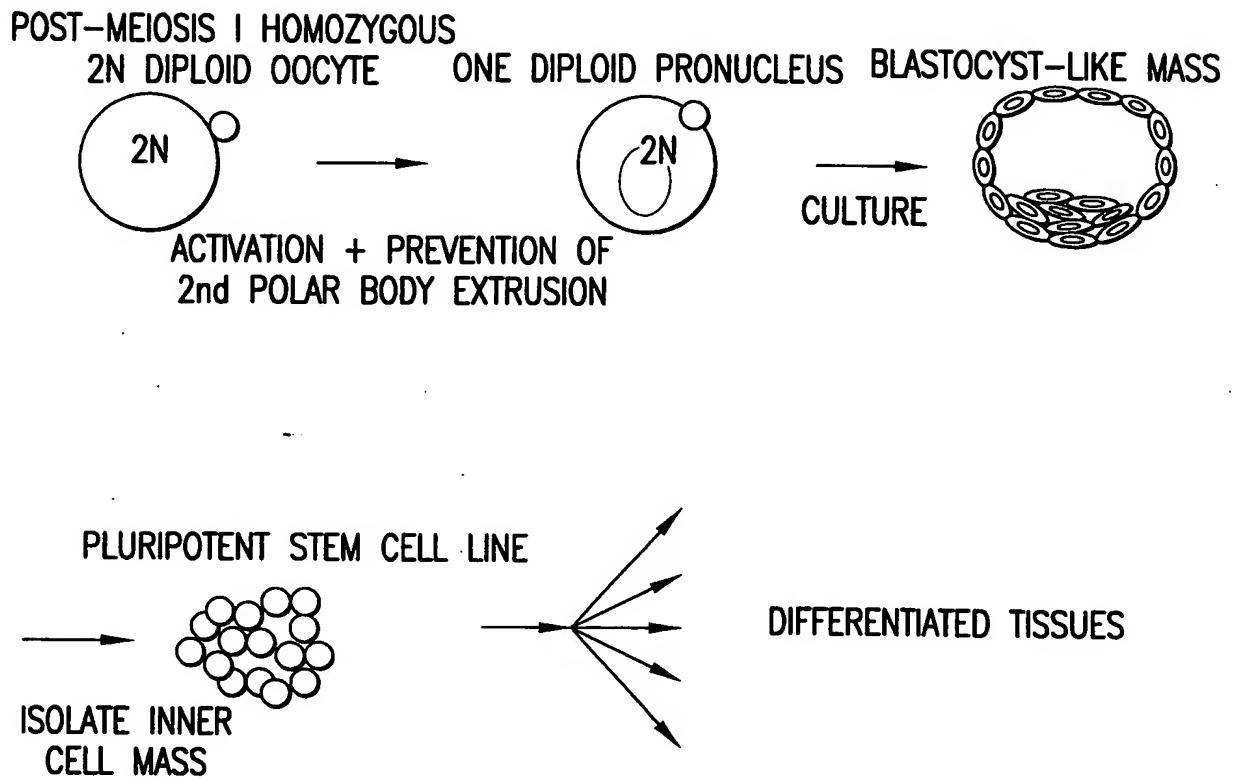


FIG.2

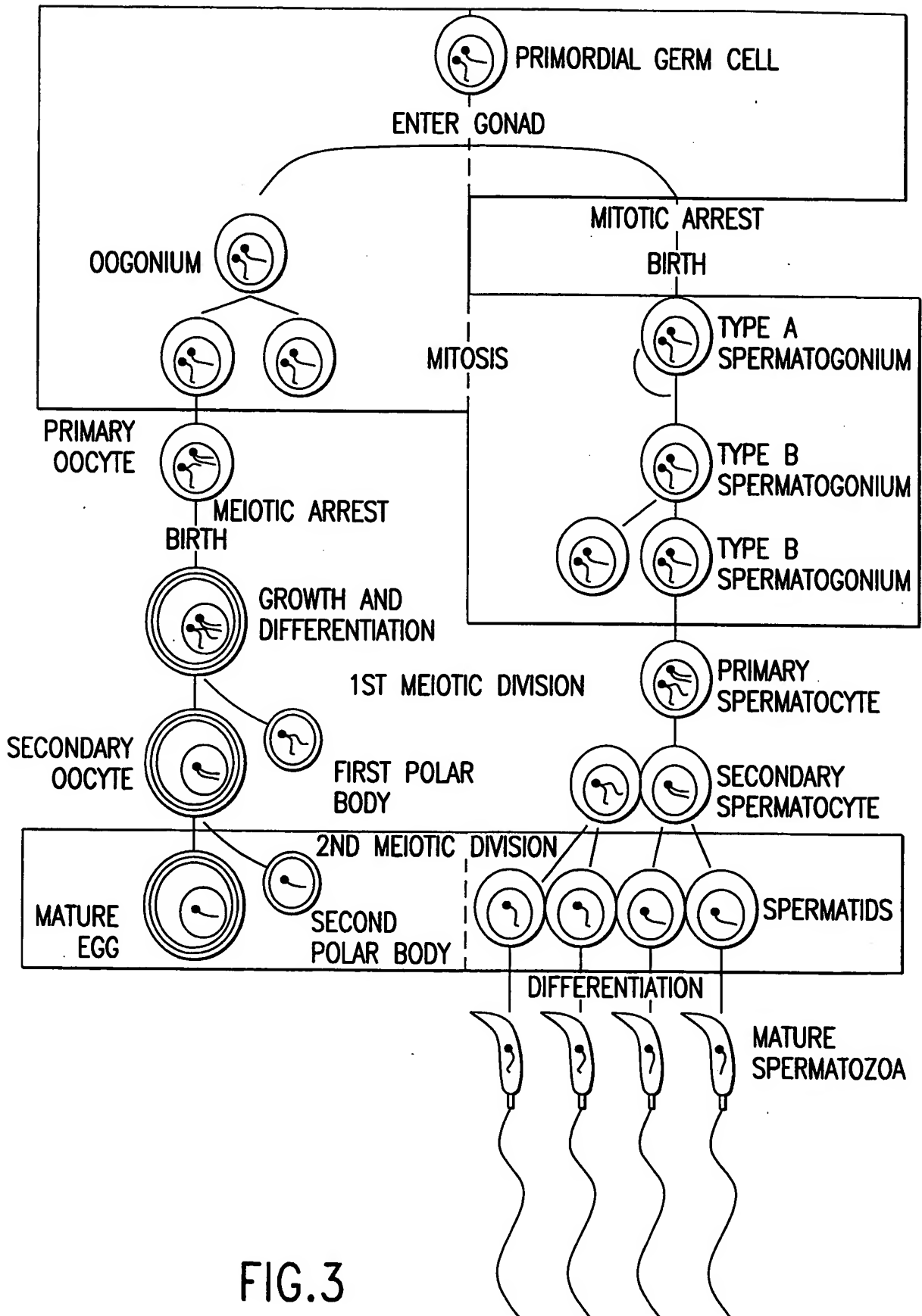


FIG.3

## Serological Specificities of the HLA-A, -B, and -C Loci

A locus	B locus	C locus
A1 <sup>a</sup>	B5	B50(21) <sup>a</sup>
A2 <sup>a</sup>	B7 <sup>a</sup>	B51(5) <sup>a</sup>
A203	B703	B5102
A210	B8 <sup>a</sup>	B5103
A3 <sup>a</sup>	B12	B52(5) <sup>a</sup>
A9	B13 <sup>a</sup>	B53 <sup>a</sup>
A10	B14 <sup>a</sup>	B54(22)
A11 <sup>a</sup>	B15	B55(22) <sup>a</sup>
A19	B16	B56(22) <sup>a</sup>
A23(9) <sup>a</sup>	B17	B57(17) <sup>a</sup>
A24(9) <sup>a</sup>	B18 <sup>a</sup>	B58(17) <sup>a</sup>
A2403	B21	B59
A25(10) <sup>a</sup>	B22	B60(40) <sup>a</sup>
A26(10) <sup>a</sup>	B27 <sup>a</sup>	B61(40) <sup>a</sup>
A28	B35 <sup>a</sup>	B62(15) <sup>a</sup>
A29(19) <sup>a</sup>	B37 <sup>a</sup>	B63(15) <sup>a</sup>
A30(19) <sup>a</sup>	B38(16) <sup>a</sup>	B64(14) <sup>a</sup>
A31(19) <sup>a</sup>	B39(16) <sup>a</sup>	B65(14) <sup>a</sup>
A32(19) <sup>a</sup>	B3901(16)	B67
A33(19) <sup>a</sup>	B3902(16)	B70 <sup>a</sup>
A34(10) <sup>a</sup>	B40	B71(70) <sup>a</sup>
A36	B4005	B72(70) <sup>a</sup>
A43	B41 <sup>a</sup>	B73
A66	B42 <sup>a</sup>	B75(15)
A68(28) <sup>a</sup>	B44(12) <sup>a</sup>	B76(15)
A69(28) <sup>a</sup>	B45(12) <sup>a</sup>	B77(15)
A74(19)	B46	B7801
	B47 <sup>a</sup>	Bw4 <sup>a</sup>
	B48	Bw6 <sup>a</sup>
	B49(21) <sup>a</sup>	

<sup>a</sup> Serological specificities to be included in a screening panel.

FIG.4A

Officially Recognized HLA-DR and HLA-DQ,  
Specificities 1992<sup>3</sup>

DR1	DQ1
DR103	DQ2
DR2	DQ3
DR3	DQ4
DR4	DQ5(1)
DR5	DQ6(1)
DR6	DQ7(3)
DR7	DQ8(3)
DR8	
DR9	
DR10	
DR11(5)	
DR12(5)	
DR13(6)	
DR14(6)	
DR1403	
DR1404	
DR15(2)	
DR16(2)	
DR17(3)	
DR18(3)	
DR51	
DR52	
DR53	

(N) = the broad HLA-DR or HLA-DQ specificity

FIG.4B

Restriction Endonucleases for Genotyping of DQA1, DQB1, DRB1, DRB3, DRB5, DPA1, and DPB1 Alleles

Allele	Antigen	Restriction endonucleases
DQA1		<i>Apa</i> I, <i>Hph</i> I, <i>Bsa</i> JI, <i>Fok</i> I, <i>Mbo</i> II, <i>Mn</i> II
DQB1	DQw1	<i>Fok</i> I, <i>Apa</i> I, <i>Hae</i> II, <i>Sfa</i> NI, <i>Bss</i> HII, <i>Hph</i> I
	DQw2,3,4	<i>Fok</i> I, <i>Bgl</i> II, <i>Sac</i> I, <i>Acy</i> I, <i>Hpa</i> II
DRB1	DR1	<i>Ava</i> II, <i>Pst</i> I
	DR2	<i>Fok</i> I, <i>Cfr</i> 13I, <i>Hph</i> I
	DR3,5,6,8	<i>Ava</i> II, <i>Fok</i> I, <i>Kpn</i> I, <i>Hae</i> II, <i>Cfr</i> 13I, <i>Sfa</i> NI, <i>Sac</i> II, <i>Bsa</i> JI, <i>Apa</i> I, <i>Hph</i> I, <i>Rsa</i> I
	DR4	<i>Sac</i> II, <i>Ava</i> II, <i>Hinf</i> I, <i>Hae</i> II, <i>Hph</i> I, <i>Mn</i> II
DRB3		<i>Hinf</i> I, <i>Kpn</i> I, <i>Hph</i> I
DRB5		<i>Sfa</i> NI, <i>Cfr</i> 13I
DPA1		<i>Alu</i> I, <i>Acy</i> I, <i>Mbo</i> II
DPB1		<i>Bsp</i> 1286I, <i>Fok</i> I, <i>Dde</i> I, <i>Bsa</i> JI, <i>Bss</i> HII, <i>Cfr</i> 13I, <i>Rsa</i> I, <i>Eco</i> NI, <i>Ava</i> II

FIG.5

## List of SSOs for HLA Class II Oligotyping

## SSO Probes for HLA-DR Generic Typing

	Oligo seq 5'-3'	AA	Specificity
L11	TTCAAACTTAAGCTGCCAC	9-14	DR1
D11	CTCATACTTATCCTGCTGC	9-14	DR2
N77	TCTGCAGTAGTTGTCCACC	75-80	DR3
H33	CTCTTGGTGATAGAAGTATC	29-53	DR4
E58	CCAGTACTCCTCATCAGGC	56-61	DR11
L37	AGCGCAGGAGTCTCTCCTG	34-39	DR12
G11	CTTATACTTACCCTGCCAC	9-14	DR7
L74	GTGTCCACCAGGCCCGCC	71-77	DRS (+1403)
Y26	CTGTGCAGATACCGCACCC	23-29	DR9
V11	CTCAAACTTAACCTCTCTCC	9-14	DR10
E71	GGCCCGCTCGTCTTCCAGG	68-73	DR13 (1301, 1302, 1304)
			DR1 (0103)
			DR4 (0402, 0414)
			DR11 (1102, 03)
			DR13-HAG (1303)
			DR14 (1401, 04, 07)
			DR3
			DR13 (1301, 02, 04, 06)
			DR14 (1402, 03, 06)
			DR2 (DRB5*0101)
			DR2 (DRB5*02)
			DR1 (0102)
			DR12
K71	CGGCCCCGCTTGCTCTCCAG	68-73	
H60	GTTCCAGTGCTCCGCAGCA	57-62	
N37	AGCGCACGTTCTCTCTCTG	34-39	
D37	GAAGCGCAAGTCTCTCTCT	34-40	
AV86	GCTCTCCACAGCCCCGCTAG	83-88	

FIG.6A



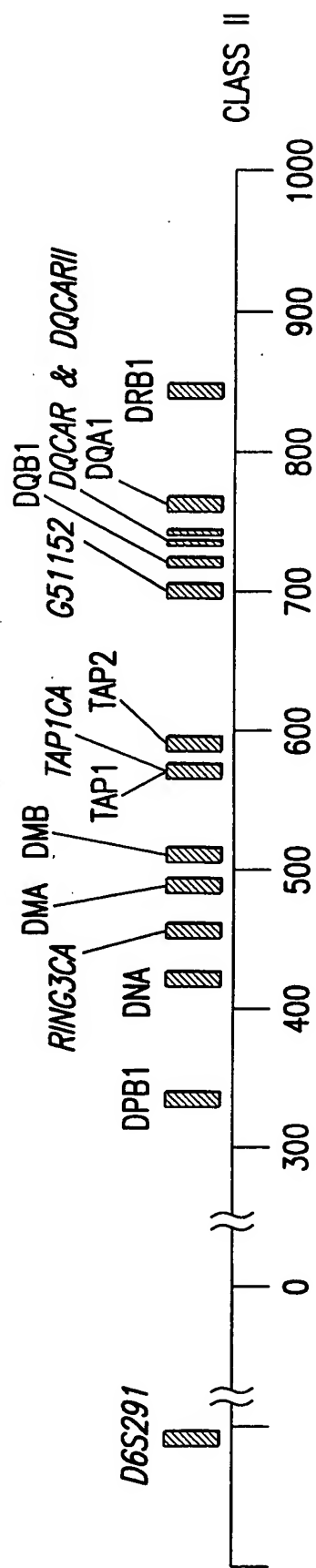
## SSO Probes for the Analysis of DRB1, DRB3, DRB5 Subtypes

	Oligo seq 5' - 3'	AA	Specificity
G13	ACACTCACCCGTAGAGTAC	9-14	0801-0805, 1105, 1201, 1202, 1404
H30-2	ATAGAAGTGTCTGTCCAGG	27-32	1503
N37	AGGCACGTTCTCCTCCTG	34-39	0301, -02, 1301, 1302, 1305, 1306, 1402, 1403, 1406
S37	AGGCACGGACTCCTCTTG	34-39	0406
S57	GCCTAGCGCCGAGTACTG	56-61	0405, 0409 - 0412, 0801, 0803, 0805, 1303, 1304
H60	GTTCCAGTGCTCCGCAGCA	57-62	1401, 1404, 1407
F67	CTTCCAGGAAGTCTTCTG	64-69	1601, 1101, 1103 - 1105, 1202, 1305
I67	CTTCCAGGATGCTCTTCTG	64-69	0803, 1102, 1201, 1301 - 1304, 1306, 0412
I67-2	ACATCCTGGAAGACGAGC	66-71	0103, 0402, 0414, 1102, 1301, 1302, 1304
E71	GGCCCGCTCGTCTTCCAGG	68-73	0103, 0402, 0414, 1102, 1103, 1301, 1302, 1304
K71	CGGCCGCTTGTCTTCCAG	68-73	1303
QK71	CGGCCGCTTGTCTCGAC	68-73	0401, 0409, 0413
QR71	CCGGGCGCGCTCTGCTC	69-74	0404, 0405, 0408, 0410 - 0411
QR71-2	CGGCCGCTCTGCTCCAG	68-73	0101, 0102, 0403 - 0408, 0410, 0411, 1402, 1406
R71	GGCCCGCTGTCTTCCAGG	68-73	1101, 1104, 1105, 1305, 1306, 0801 - 0805, 1403, 0412
R71-2	CCGGCGCGCTGTCTTC	69-74	1601, 1602, DRB5*0101, 0102
RR71	AGCGGAGCGGGCCGAGG	69-74	1401, 1404, 1405, 1407 (DRB*0101)
E74	GTGTCCACCTCGGCCCGCC	71-77	0403, 0406, 0407, 0411, 1404, 1405, 1407
L74	GTGTCCACAGGGCCCGCC	71-77	0801 - 0805, 1403, 0412
V86	AACTACGGGGTTGTGGAG	82-87	Val86
G86	AACTACGGGGTTGGTGAG	82-87	Gly86
AV86	GCTCTCCACAGCCCCGTAG	83-88	0102, 1201, 1202
			DRB5*02

FIG.6B

Locus	5' Primer sequence	3' Primer sequence
D6S276	5-tcaatcaaatcatccccagaag	5-ccttctttgcagactgtcacc
D6S105	5-gggattacaggcaggagccac	5-gaaggagaattgtaattccg
MOGCA	5-gaaatgtgagaataaaggaga	5-gataaagggggaactactaca
D6S265	5-agtcaccctactgtgctatc	5-atcgaggtaaacacagcagaaaag
MIB	5-gcttcaccgcatcagtagaagac	5-gcatgggtgcagagatagtcaggtc
D6S275	5-ggagaagttgagtatttctgc	5-accaaacttcaaatcttcgg
DQCAR11	5-gcactatcattaaatttgctttccacagtac	5-tgattcataaggcaagaatccagcatattgg
DQCAR	5-gaaacatatattaacagagacagacaaa	5-catttctcttcccttactcactcata
G51152	5-ggtaaaattcctgactggcc	5-gacagctcttcttaacctgc
TAP1CA	5-gctttgatctccccctc	5-ggacaataatttgcctcctgagg
RING3CA	5-tgcttataggagagactaccg	5-gaggtaatgtcacaggatggg
D6S291	5-ggcattcaggcatgcctggc	5-ggggatgacgaattattcactaact

FIG.7



10/13

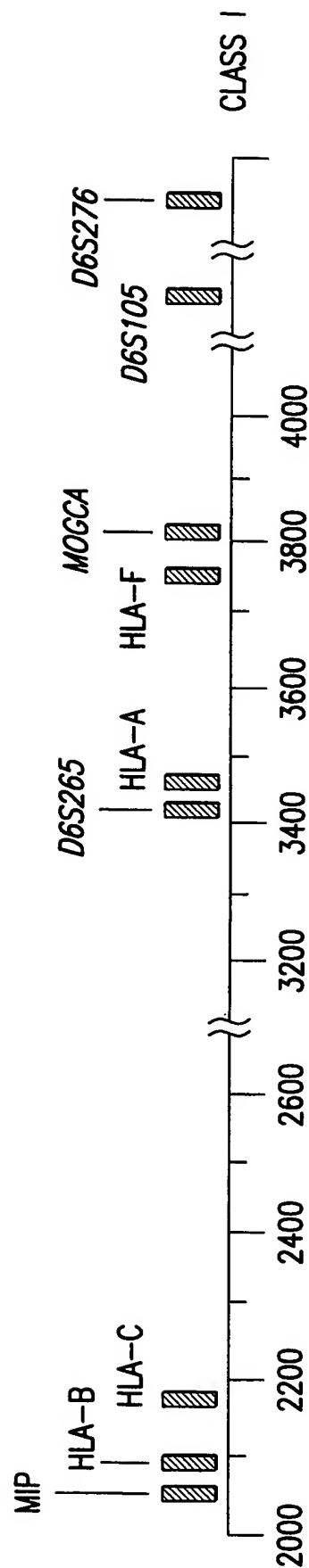
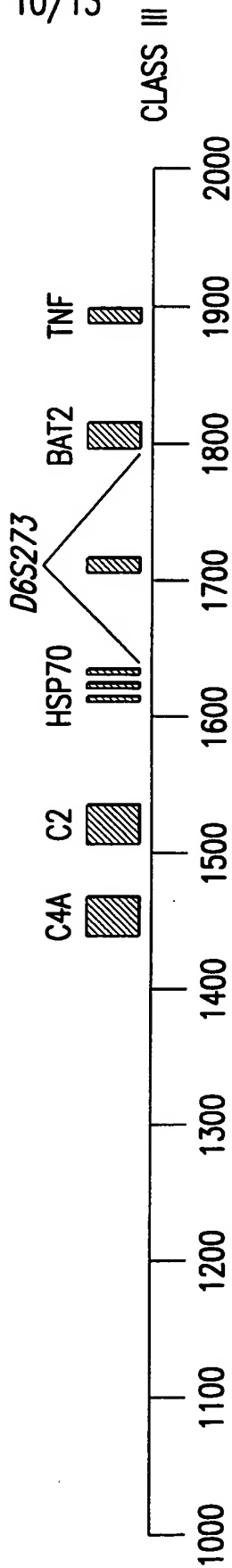


FIG.8



FIG. 9A

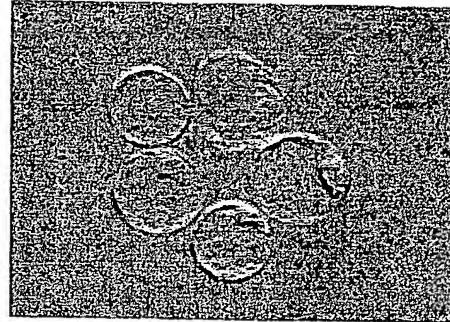


FIG. 9B

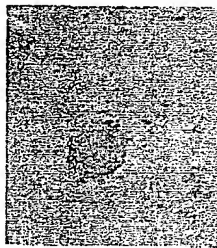


FIG. 9C

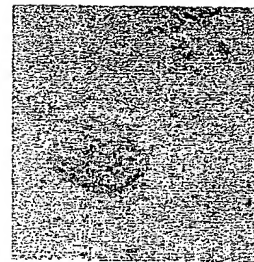


FIG. 9D



FIG. 9E

1 2 3



FIG. 9F

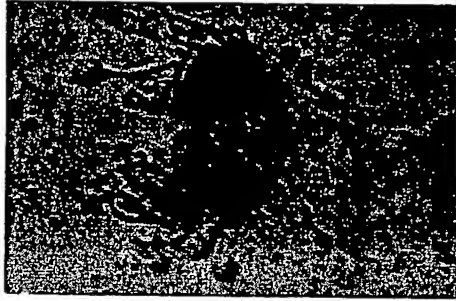


FIG. 10A

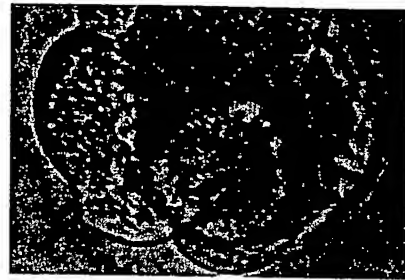


FIG. 10B

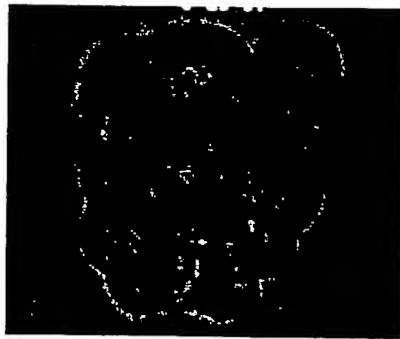


FIG. 10C



FIG. 10D

PCR Primers for Amplification of the DQA1, DQB1, DRB1, DRB3, DRB5, DPA1, and DPB1 Genes															
Gene	Primers	Sequences (5' to 3')	Den.	Ann.	Ext.										
DQA1	5'Primer 3'Primer	GH26 GH27	(242 bp)	94°C	62°C										
DQB1	5'Primer 3'Primer	GH28NL QB202				(241 bp)	94°C	72°C							
	5'Primer	GH28NL							(237 bp)	94°C	72°C				
	DRB1	3'Primer										QB204	(261 bp)	94°C	72°C
		5'Primer										5'R2			
		5'Primer	5'R4	(256 bp)	94°C							72°C			
5'Primer		5'R9-1	(206 bp)			94°C	72°C								
5'Primer	5'R1	(206 bp)						94°C	72°C						
5'Primer	5'R7									(206 bp)	94°C		72°C		
5'Primer	5'R10			(206 bp)	94°C							72°C			
5'Primer	5'R3568		(265 bp)			94°C	60°C								
DRB3	3'Primer	3'R (common for DRB1)	(271 bp)	94°C	72°C										
DRB5	5'Primer 3'Primer	DRBAMP-52 3'R				(259 bp)	94°C	72°C							
	5'Primer 3'Primer	5'DRB5 3'R							(288 bp)	92°C	58°C				
	DPA1	5'Primer 3'Primer										PL PR	(161 bp)		
		5'Primer 3'Primer										PLTM PRTM			
5'Primer 3'Primer		DPB101N DPB201			72°C										
5'Primer 3'Primer															

Note: Den.: Denaturation, Ann.: annealing, Ext.: extension.

FIG.11